(2) Words imparting the plural include the singular; and

(3) Words imparting the masculine gender include the feminine;

(b) In this subchapter, the word: (1) ''Shall'' is used in an imperative sense;

(2) ''Must'' is used in an imperative sense;

(3) ''Should'' is used in a recommendatory sense;

(4) ''May'' is used in a permissive sense to state authority or permission to do the act described, and the words ''no person may * * *'' or ''a person may not * * *'' means that no person is required, authorized, or permitted to do the act described; and

(5) ''Includes'' is used as a word of inclusion not limitation.

[Amdt. 171–32, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 171–32A, 41 FR 40630, Sept. 20, 1976; Amdt. 171–121, 58 FR 51528, Oct. 1, 1993]

§ 171.10 Units of measure.

(a) *General.* To ensure compatibility with international transportation standards, most units of measure in this subchapter are expressed using the International System of Units (''SI'' or metric). Where SI units appear, they are the regulatory standard. U.S. standard or customary units, which appear in parentheses following the SI units, are for information only and are not intended to be the regulatory standard.

(b) Abbreviations for SI units of measure generally used throughout this subchapter are as shown in paragraph (c) of this section. Customary units shown throughout this subchapter are generally not abbreviated.

(c) *Conversion values.* (1) Conversion values are provided in the following table and are based on values provided in ASTM E 380, ''Standard for Metric Practice''.

(2) If an exact conversion is needed, the following conversion table should be used.

TABLE OF CONVERSION FACTORS FOR SI UNITS

Measurement	SI to U.S. standard	U.S. standard to SI
Activity	1 TBq=27 Ci	1 Ci=0.037 TBq
Length	1 cm=0.3937008 in	1 in=2.540000 cm
	1 m=3.280840 ft	1 ft=0.3048000 m
Thickness	1 mm=0.03937008 in	1 in=25.40000 mm
Mass (weight)	1 kg=2.204622 lb	1 lb=0.4535924 kg
	1 g=0.03527397 oz	1 oz=28.34952 g
Pressure	1 kPa=0.1450377 psi	1 psi=6.894757 kPa
	1 Bar=100 kPa=14.504 psi	1 psi=0.06895 Bar
	1 kPa=7.5 mm Hg	
Radiation level	1 Sv/hr=100 rem/hr	1 rem/hr=0.01 Sv/hr
Volume (liquid)	1 L=0.2641720 gal	1 gal=3.785412 L
	1 mL=0.03381402 oz	1 oz=29.57353 mL
	1 m^3=35.31466 ft^3	1 ft^3=0.02831685 m^3
Density	1 kg/m^3=0.06242797 lb/ft^3	1 lb/ft^3=16.01846 kg/m^3
Force	1 Newton = 0.2248 Pound-force	1 Pound-force=4.483 N

Abbreviation for units of measure are as follows:
Unit of measure and abbreviation:
(SI): millimeter, mm; centimeter, cm; meter, m; gram, g; kilogram, kg; kiloPascal, kPa; liter, L; milliliter, mL; cubic meter, m^3; Terabecquerel, TBq; Gigabecquerel, GBq; millisievert, mSv; Newton, N;
(U.S.): Inch, in; foot, ft; ounce, oz; pound, lb; psig, psi; gallon, gal; cubic feet, ft^3; Curie, Ci; millicurie, mCi; millirem, mrem.

[Amdt. 171–111, 56 FR 66159, Dec. 20, 1991, as amended by Amdt. 171–136, 60 FR 49108, Sept. 21, 1995; Amdt. 171–135, 60 FR 50302, Sept. 28, 1995; 66 FR 33335, June 21, 2001; 66 FR 45378, Aug. 28, 2001; 68 FR 75740, Dec. 31, 2003]

§ 171.11 Use of ICAO Technical Instructions.

Notwithstanding the requirements of parts 172 and 173 of this subchapter, a hazardous material may be transported by aircraft, and by motor vehicle either before or after being transported by aircraft, in accordance with the ICAO Technical Instructions (IBR, see § 171.7) if the hazardous material:

(a) Is packaged, marked, labeled, classified, described and certified on a

shipping paper and otherwise in a condition for shipment as required by the ICAO Technical Instructions;

(b) Is within the quantity limits prescribed for transportation by either passenger-carrying or cargo aircraft, as appropriate, as specified in the ICAO Technical Instructions;

(c) Is not a forbidden material or package according to §173.21 of this subchapter; is not a forbidden material as designated in Column (3) of the §172.101 Table of this subchapter; and is not forbidden by Column 9(A) of the §172.101 Table of this subchapter when transported on passenger aircraft, or is not forbidden by Column 9(B) of the §172.101 Table of this subchapter when transported by cargo aircraft.

(d) Fulfills the following additional requirements as applicable:

(1) For a material that meets the definition of a hazardous substance as defined in this subchapter, the shipping paper and package markings must conform to the provisions in §§172.203(c) and 172.324, respectively, of this subchapter.

(2) When a hazardous material, which is subject to the requirements of the ICAO Technical Instructions, is also a hazardous waste as defined in this subchapter:

(i) The word ''Waste'' must precede the proper shipping name on shipping papers and package markings; and

(ii) It must comply with §172.205 with respect to the hazardous waste manifests.

(3) When a hazardous material is not subject to the requirements of the ICAO Technical Instructions, it must be transported as required by this subchapter.

(4) When a hazardous material that is regulated by this subchapter for transportation by highway is transported by motor vehicle on a public highway under the provisions of this section, the following requirements apply:

(i) The motor vehicle must be placarded in accordance with subpart F of part 172 of this subchapter; and

(ii) The shipping paper may include an indication that the shipment is being made under the provisions of this section or the letters ''ICAO.''

(5) For air bag inflators, air bag modules, or seat-belt pretensioners, the shipping paper description must conform to the requirements of §173.166(c) of this subchapter.

(6) For radioactive materials:

(i) Shipping papers for highway route controlled quantity radioactive materials shipments must meet the requirements of §172.203(d)(10) of this subchapter.

(ii) Competent authority certification and any necessary revalidation for Type B, Type B(U), Type B(M), and fissile materials packages must be obtained from the appropriate authorities as specified in §§173.471, 173.472 and 173.473 of this subchapter, and all requirements of the certificates and revalidations must be met.

(iii) Except for limited quantities of Class 7 (radioactive) material, the provisions of §§172.204(c)(4), 173.448(e), (f) and (g)(3) of this subchapter apply.

(iv) Excepted packages of limited quantities of radioactive material, instruments or articles, or articles containing natural uranium or thorium, must meet the provisions of §173.421, 173.424, or 173.426 of this subchapter, as appropriate.

(v) Type A package contents shall be limited in accordance with §173.431 of this subchapter.

(vi) The definition for ''radioactive material'' in §173.403 of this subchapter applies to radioactive materials transported under the provisions of this section.

(7) If a United States variation is indicated in the ICAO Technical Instructions for any provision governing the transport of the hazardous material, the hazardous material is transported in conformance with that variation.

(8) Abbreviations may not be used in shipping paper entries or package markings unless they are specifically authorized by this subchapter. ICAO class or division numbers are not considered to be abbreviations.

(9) When a hazardous material, which is subject to the requirements of the ICAO Technical Instructions, is a material poisonous by inhalation (see §171.8 of this subchapter)—

(i) The shipping description must include the words ''Toxic Inhalation Hazard'' or ''Poison-Inhalation Hazard'' or ''Inhalation Hazard'', as required in §172.203(m) of this subchapter;

(ii) The material must be packaged in accordance with the requirements of this subchapter; and

(iii) The package must be marked in accordance with §172.313 of this subchapter and labeled with ''POISON INHALATION HAZARD'' or ''POISON GAS'', as appropriate, in accordance with subpart E of part 172 of this subchapter.

(10) Shipments of hazardous materials under this section must conform to the requirements for emergency response information as prescribed in subpart G of part 172 of this subchapter.

(11) Packages of Class 1 (explosive) materials must be marked in accordance with §172.320 of this subchapter.

(12) If an ammonium nitrate fertilizer or ammonium nitrate mixed fertilizer, must not meet the definition and criteria of a Class 1 (explosive) material.

(13) Transportation of marine pollutants, as defined in §171.8 of this subchapter, in bulk packagings must conform to the requirements of §§172.203(l) and 172.322 of this subchapter.

(14) Except as provided for limited quantities of compressed gases in containers of not more than 4 fluid ounces capacity under §173.306(a)(1) of this subchapter, aerosols must meet the definition for ''Aerosol'' in §171.8. In addition, an aerosol must be in a metal packaging if the packaging exceeds 7.22 cubic inches.

(15) A chemical oxygen generator, including when fitted in protective breathing equipment or other apparatus, is forbidden for transportation aboard a passenger-carrying aircraft and must be approved, classed, described and packaged in accordance with the requirements of this subchapter for transportation on cargo-only aircraft. A chemical oxygen generator that has been used or spent is also forbidden for transportation on a passenger aircraft and cargo aircraft only.

(16) A cylinder containing Oxygen, compressed, may not be transported on a passenger-carrying aircraft or in an inaccessible cargo location aboard a cargo-only aircraft unless it is packaged as required by Part 173 and Part 178 of this subchapter and is placed in an overpack or outer packaging that satisfies the requirements of Special Provision A52 in §172.102.

(17) A self-reactive substance that is not identified by technical name in the Self-reactive Materials Table in §173.224(b) of this subchapter must be approved by the Associate Administrator in accordance with the requirements of §173.124(a)(2)(iii) of this subchapter. An organic peroxide that is not identified by a technical name in any of the organic peroxide tables found in §173.225 of this subchapter must be approved by the Associate Administrator in accordance with the requirements of §173.128(d) of this subchapter.

(18) Primary lithium batteries and cells are forbidden for transportation aboard passenger-carrying aircraft. Equipment containing or packed with primary lithium batteries or cells are forbidden from transport aboard passenger-carrying aircraft except as provided in §172.102, Special Provision A101 or A103, of this subchapter. Except for primary lithium batteries and cells that are contained in or packed with equipment, packagings containing primary lithium batteries and cells that meet the exceptions in §173.185(b) and (c) of this subchapter must be marked ''PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT'' and may be transported aboard cargo-only aircraft.

(19) [Reserved]

(20) Cylinders (including UN pressure receptacles) transported to, from, or within the United States must conform to the applicable requirements of this subchapter. Unless otherwise excepted in this subchapter, a cylinder may not be transported unless;

(i) The cylinder is manufactured, inspected and tested in accordance with a DOT specification or a UN standard prescribed in part 178 of this subchapter, except that cylinders not conforming to these requirements must meet the requirements in §173.301(j), (k) or (l) of this subchapter;

(ii) The cylinder is equipped with a pressure relief device in accordance with §173.301(f) of this subchapter and

conforms to the applicable requirements in part 173 for the hazardous material involved;

(iii) For an aluminum cylinder in oxygen service, except when used aboard an aircraft in accordance with the applicable airworthiness requirements and operating regulations, the cylinder openings conform to the requirements in this paragraph. For a DOT specification cylinder (e.g. 3AL), the opening must be configured with straight (parallel) threads. A UN pressure receptacle may have straight (parallel) or tapered threads provided the UN pressure receptacle is marked with the thread type (e.g. ''17E, 25E, 18P or 25P'') and fitted with the properly marked valve; and

(iv) The UN pressure receptacle is marked with ''USA'' as a country of approval in conformance with §§ 178.69 and 178.70 of this subchapter.

[Amdt. 171–69, 47 FR 54821, Dec. 6, 1982]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 171.11, see the List of CFR Sections Affected which appears in the Finding Aids section of the printed volume and on GPO Access.

EFFECTIVE DATE NOTE: At 71 FR 3425, Jan. 23, 2006, § 171.11 was amended by adding a new paragraph (19) to paragraph (d), effective Jan. 1, 2007. For the convenience of the user, the added text is set forth as follows:

§ 171.11 Use of ICAO Technical Instructions.

* * * * *

(d) * * *

(19) Lighters and lighter refills containing Division 2.1 or Class 3 materials (*see* § 171.8 of this subchapter) must conform to the requirements of this subchapter.

§ 171.12 Import and export shipments.

(a) *Importer's responsibility.* Except in the case of a shipment from Canada conforming to § 171.12a of this subchapter, each person importing a hazardous material into the United States shall provide the shipper and the forwarding agent at the place of entry into the United States timely and complete information as to the requirements of this subchapter that will apply to the shipment of the material within the United States. The shipper, directly or through the forwarding agent at the place of entry, shall provide the initial carrier in the United States the certificate of compliance required by § 172.204 of this subchapter. The carrier may not accept the material for transportation unless the required certification is provided. All shipping paper information required under paragraph (b) or (d) of this section must be in English.

(b) *IMDG Code.* The IMDG Code (IBR, see § 171.7) sets forth descriptions, classifications, packagings, labeling and vessel stowage requirements. Notwithstanding the provisions of this subchapter, a material that is packaged, marked, classed, labeled, placarded, described, stowed and segregated, and certified (including a container packing certification, if applicable) in accordance with the IMDG Code, and otherwise conforms to the requirements of this section, may be offered and accepted for transportation and transported within the United States. The following conditions and limitations apply:

(1) The provisions of this paragraph (b) apply only if all or part of the transportation is by vessel.

(2) A number of materials listed in the IMDG Code are not subject to the requirements of this subchapter. The provisions of this subchapter do not apply to materials listed in the IMDG Code which are not designated as hazardous materials under this subchapter. These materials may, however, be transported in the U.S. when described, marked and labeled in accordance with the IMDG Code.

(3) A material that is designated as a hazardous material under this subchapter, but is not subject to the requirements of the IMDG Code (see § 171.12 of this subchapter) may not be transported under the provisions of this section and is subject to the requirements of this subchapter. Examples of such materials include flammable gas powered vehicles and combustible liquids.

(4) A forbidden material or package according to § 173.21 of this subchapter or column 3 of the § 172.101 table may not be transported under the provisions of this section.

(5) Except for IBCs and UN portable tanks intended for liquids or solids, bulk packagings must conform to the